

Claims

- [0043] 1. Apparatus comprising a fiber optic light source configured to produce a light spectrum having a mean wavelength that is substantially unaffected when exposed to weapon's level radiation threat.
- [0044] 2. Apparatus as defined in claim 1, wherein said fiber optic light source is configured to produce a light output with a mean wavelength in the range of 1515 nm to 1545 nm.
- [0045] 3. Apparatus as defined in claim 1, wherein said fiber optic light source is configured to produce a light output with mean wavelength of about 1532 nm.
- [0046] 4. Apparatus as defined in any of claims 1-3, wherein said fiber optic light source comprises a pump laser and a length of doped fiber optic material through which is configured to receive light from said light pump, and to re-emit the light with a predetermined spectrum and mean wavelength.
- [0047] 5. Apparatus as defined in claim 4, wherein said length of fiber optic material comprises a length of Erbium Doped Fiber having a length of about 5 to 15 meters.
- [0048] 6. A method of generating light in a wavelength which is useful in an interferometric fiber optic gyroscope comprising the steps of generating light in a predetermined mean wavelength range, re-emitting the light at a mean wavelength in which it is substantially unaffected by a weapons level radiation threat, and directing the re-emitted light to an interferometric fiber optic gyroscope.
- [0049] 7. A method as defined in claim 6, wherein said step of re-emitting the generated light comprises transmitting the light through an optical fiber which is configured to re-emit the generated light with a mean wavelength in a range of about 1515 to 1545 nm.

[0050] 8. A method as defined in claim 7, wherein said optical fiber is configured to re-emit the light with a mean wavelength of about 1532 nm.

[0051] 9. A method as defined in any of claims 8, further including the step of filtering the re-emitted light before directing the re-emitted light to the interferometric fiber optic gyroscope.

[0052] 10. A method as defined in claim 6, further including the step of filtering the re-emitted light before directing the re-emitted light to the interferometric fiber optic gyroscope.

[0053] 11. A method as defined in any of claims 6-10, wherein said step of re-emitting the light comprises directing light from the source through a length of Erbium Doped Fiber..

[0054] 12. A method as defined in claim 11, wherein said length of Erbium Doped Fiber has a length of about 5 to 15 meters.

[0055] 13. Apparatus comprising a light source configured to produce a light output shaped such that more than 50% of power is (i) within a 1515 nm to 1545 nm mean wavelength range and (ii) substantially centered about a mean wavelength within the 1515 nm to 1545 nm mean wavelength range.

[0056] 14. Apparatus as defined in claim 13, wherein said light source is configured such that at least 85% of power is (i) within the 1515 nm to 1545 nm mean wavelength range and (ii) substantially centered about a mean wavelength in the 1515 nm to 1545 nm mean wavelength range.

[0057] 15. Apparatus as defined in claim 14, wherein said light source is configured such that at least 99% of power is (i) within the 1515 nm to 1545 nm mean wavelength range and (ii) substantially centered about a mean wavelength in the 1515 nm to 1545 nm mean wavelength range.

[0058] 16. Apparatus as defined in claim 15, wherein said light source is configured such that at least 99% of power is substantially centered about a mean wavelength of 1532 nm.

- [0059] 17. Apparatus comprising a light source configured to produce a light output with a mean wavelength drift of less than 500 ppm (parts per million) when exposed to weapons level radiation.
- [0060] 18. Apparatus as defined in claim 17, wherein said light source is configured to produce a light output with a mean wavelength drift of less than 150 ppm when exposed to weapons level radiation.
- [0061] 19. Apparatus as defined in claim 18, wherein said light source is configured to produce a light output with a mean wavelength drift of less than 15 ppm when exposed to weapons level radiation.
- [0062] 20. Apparatus as defined in claim 19 wherein said light source is configured such that at least 99% of power is substantially centered about a mean wavelength of 1532 nm.
- [0063] 21. Apparatus as defined in claim 20, wherein an interferometric optical gyroscope is provided, and the output of said light source is directed to said interferometric optical gyroscope.
- [0064] 22. Apparatus as defined in claim 19, wherein an interferometric optical gyroscope is provided, and the output of said light source is directed to said interferometric optical gyroscope.
- [0065] 23. Apparatus as defined in claim 15, wherein an interferometric optical gyroscope is provided, and the output of said light source is directed to said interferometric optical gyroscope.
- [0066] 24. Apparatus as defined in any of claims 13 through 23, wherein said light source comprises a pump laser and a material which receives the light output of the laser and re-emits the light at a mean wavelength within a wavelength range of 1515 nm to 1545 nm.
- [0067] 25. Apparatus as defined in claim 24, wherein said material comprises a length of fiber.

- [0068] 26. Apparatus as defined in claim 25, wherein said length of fiber comprises a length of doped fiber.
- [0069] 27. Apparatus as defined in claim 26, wherein said length of doped fiber comprises a length of Erbium doped fiber.
- [0070] 28. Apparatus as defined in claim 27, wherein said pump laser comprises a 980 nm pump laser, and said length of Erbium doped fiber has a length in the range of 5-15 meters.
- [0071] 29. Apparatus as defined in claim 28, wherein said light source further includes an isolator for transmitting the re-emitted light from the length of fiber, and a filter for filtering the re-emitted light transmitted by the isolator.
- [0072] 30. Apparatus as defined in claim 29, wherein said filter comprises a band reject filter grating.
- [0073] 31. Apparatus as defined in claim 24, wherein said material comprises a doped material.
- [0074] 32. Apparatus as defined in claim 31, wherein said doped material comprises Erbium doped material.
- [0075] 33. Apparatus as defined in claim 32, wherein said light source further includes an isolator for transmitting the re-emitted light from Erbium doped material, and a filter for filtering the re-emitted light transmitted by the isolator.
- [0076] 34. Apparatus as defined in claim 33, wherein said filter comprises a band reject filter grating.
- [0077] 35. Apparatus as defined in claim 24, wherein said light source further includes an isolator for transmitting the re-emitted light from the material, and a filter for filtering the re-emitted light transmitted by the isolator.